

NATIONAL WEATHER SERVICE INSTRUCTION 10-1721

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Operations and Services

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***INTERNATIONAL SATELLITE COMMUNICATIONS SYSTEM (ISCS) SYSTEM
MANAGEMENT***

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International Satellite Communications System (ISCS) System Management

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1. Document Purpose. This procedure describes how the National Weather Service (NWS) as the functionary specified in an Inter-agency agreement with the Federal Aviation Administration (FAA) manages, operates and maintains the International Satellite Communications System (ISCS).

2. System Description. The ISCS is a satellite data distribution system operated by NWS. The system is part of an integrated global weather distribution network covering the Atlantic and Pacific World Meteorological Organization (WMO) regions. ISCS is composed of three major components; the data provider, the data delivery and acquisition system for data broadcast and collection, and the end processor.

2.1 System Purpose. The purpose of ISCS is to provide support to the World Area Forecast System (WAFS) and the Global Telecommunications System (GTS).

2.1.1 ISCS support for WAFS. ISCS support for WAFS is in response to International Civil Aviation Organization (ICAO) and WMO requirements. ISCS and the United Kingdom WAFS - Satellite Distribution System (SADIS) make up the worldwide WAFS program; providing vital meteorological support for flight planning and air traffic management throughout the world. The purpose of ISCS/WAFS is to provide the worldwide aviation community with operational meteorological forecasts and information about meteorological phenomena required for flight

planning and safe, economic and efficient air navigation. As a real-time, point to multi-point service, it operates on a 24-hour/365-day basis. For those sites that have it located at an airport, it functions as an additive component to the Aeronautical Fixed Telecommunication Network (AFTN).

2.1.2 ISCS support for GTS. ISCS provides support for GTS service to Caribbean, Mexico and Central American nations [a.k.a WMO Region IV Meteorological Telecommunications Network (ISCS/RMTN)] as part of cooperative efforts between NWS and WMO to improve meteorological data and information dissemination within WMO Region IV. Additionally, RMTN allows for two-way exchange of meteorological information between the United States and nations of the Caribbean Islands, Mexico and Central America.

2.2 First Component - Data Provider. The Washington World Area Forecast Center (WAFC) communications facility and the GTS/Regional Telecommunications Hub (RTH) on the GTS/Main Telecommunications Network (MTN) are located together in Silver Spring, MD and jointly comprise the first component as data provider to the ISCS. This facility distributes grid products from connected producing facilities, builds and/or switches observational collectives, and distributes worded forecast messages from other communication centers on the multiple data streams of the ISCS. The data is transmitted using the transmission control protocol(TCP)/internet protocol (IP) from the Washington RTH/WAFC to the communications service provider satellite up-link facility.

2.3 Second Component - Communications Service Provider. The delivery and acquisition system is a communications provider which uses satellite technology. The provider services are currently available under an openly competed contract between MCI and NWS. The contracted satellite system uses Hughes Corporation up-link facilities located at Andover, Maine for utilization of a contracted space segment of an INTELSAT 601 at 325.5 degrees E over the Atlantic Ocean and also an up-link at Yacolt, Washington for utilization of the an INTELSAT 702 at 176 degrees E over the Pacific Ocean.¹ The satellite broadcast uses a C-band (5-6 Ghz) system. The Hughes very small aperture terminals (VSAT); 2.4 meter antenna, RF electronics; and a network interface device make up the downlink equipment. All downlink equipment with exception of network interface equipment (and maintenance) is the responsibility of the owner/end-user. The components as indicated comprise the communications system and will be placed where users establish their service. The global area of potential reception of the two satellites cover two-thirds of the globe. SADIS (United Kingdom WAFS - Satellite Distribution System) covers the remaining one-third.

2.4 Third Component - Computer Processing System. A computer processing system must be connected to the communications port of the network interface device. This computer system is selectable by the user, but the interface of the selected computer must be prepared to utilize

¹ Satellite information provided by Intelsat

Hughes Network Systems' Program Director (PD) Receiver software to enable reception of IP multicast data stream. The system can be a stand alone workstation as the third component of the ISCS. This component receives the data stream and stores the data for retrieval and use. Countries (or agencies within authorized countries) desiring connection to receive the ISCS satellite broadcast may select any workstation from the available commercial vendors. These vendors (located around the world) have built computer systems which must meet the functional requirements for an ISCS workstation. A partial list of companies with ISCS ready computer systems is located on the internet at <http://www.nws.noaa.gov/iscs/workstationvendors.htm>.

3. Organizational Responsibilities. This section describes the responsibilities of the NWS Headquarters concerning ISCS.

3.1 Weather Service Headquarters (WSH). The Assistant Administrator (AA) for Weather Services has overall responsibility for ISCS project management and coordinates ISCS program administration with FAA, WMO, and ICAO management.

3.1.1 Office of Operational Systems (OPS). OPS provides staff assistance to the AA for Weather Services and the FAA for ISCS program management and configuration control. The Data Dissemination Branch (OPS17) provides direction, assistance, resources, and other support to the registered users of the ISCS broadcast and ISCS Memorandum of Understanding (MOU) signatories, and has overall responsibility for the following:

- a. Program Management of the ISCS; including program and financial management and operational, engineering and communications;
- b. Management of the ISCS communications and system maintenance contracts; monitoring the maintenance and logistical support required;
- c. Engineering and technical support for ISCS, including programming consoles, telecommunications, and station components;
- d. Technical and system management liaison with ISCS stakeholders; including HQ, equipment manufacturers, other government agencies and user communities (foreign and domestic); and
- e. Outreach to government and private organizations (both foreign and domestic), individuals and the public regarding ISCS and its importance in support of free global aviation weather data and products dissemination required for flight planning and safe, economic, and efficient air navigation.

3.1.2 Office of Climate, Water and Weather Services (OS). OS Aviation Services (OS23) is responsible for establishing policy regarding the broadcast program content of ISCS in accordance with NWS, WMO, and ICAO requirements.

4. Area of Coverage. ISCS broadcasts can usually be received on WAFS compliant systems and other computer systems as configured with WMO International Standard interface

and data format capability. Current ISCS service area includes those regions covered by INTELSAT 601; Atlantic Ocean Region (North America, Central America, Caribbean Islands, South America, parts of Western Europe, and Western North Africa) and INTELSAT 702; Pacific Ocean Region (Alaska, Western North America, Hawaii, and the Pacific Islands of Australasia, New Zealand, Australia, Eastern Asia and Eastern Russia).

5. Weather Products and Information. The ISCS aviation weather broadcast format conforms to WMO and ICAO specific guidelines. Information that is broadcast to the aviation community is selected and prioritized based on the weather needs of the people in the service area and in accordance with the guidelines established.

6. Policy on ISCS Access. Access to the ISCS broadcast is free based on the user's purchase of a VSAT antenna, downlink, and registration with the NWS/WMO-ICAO representative.